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ABSTRACT

This report answers questions that the Governors' Task Force on Education raised in their 1993 report "The Debate on Opportunity-to-Learn Standards." To assist states as they contemplate how to link school finance with the goals of education reform, the National Governors' Association invited six experts on various aspects of school finance and reform to write essays for the Governors and their advisors. The essays cover a range of topics, addressing the linkages between school finance and the state's role in providing all students with access to a quality education program. The topics include relating inequities to student achievement; expanding categorical programs; targeting expenditures to improve teacher expertise; devolving funding and curriculum choices to local school sites; and focusing accountability efforts on teaching and learning. They offer a range of strategies that link changes in the way funding is distributed and spent to improved student achievement. Following the preface, acknowledgements, and introduction, the essays are as follows: (1) "A Focus on Resources and Student Achievement" (Robert Berne); (2) "Providing Opportunity to Learn Through Compensatory Aid" (William H. Clune); (3) "The Role of Teacher Expertise and Experience in Students' Opportunity to Learn" (Linda Darling-Hammond); (4) "School-Based Financing and Opportunity to Learn" (Allan R. Odden); (5) "Creating Equity of Opportunity Through School Choice and Charter Schools" (Jeanne Allen); and (6) "Guaranteeing Good Instruction" (Andrew C. Porter). Each essay contains references. (LMI)

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STRATEGIES FOR LINKING SCHOOL FINANCE AND STUDENTS' OPPORTUNITY TO LEARN

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NATIONAL GOVERNORS ASSOCIATION

Center for
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Strategies for Linking School Finance and Students' Opportunity to Learn

by Patricia Brown

Since their initial meeting in 1908 to discuss interstate water problems, the Governors have worked through the National Governors' Association to deal collectively with issues of public policy and governance. The association's ongoing mission is to support the work of the Governors by providing a bipartisan forum to help shape and implement national policy and to solve state problems.

The members of the National Governors' Association are the Governors of the fifty states, the territories of American Samoa, Guam, and the Virgin Islands, and the commonwealths of the Northern Mariana Islands and Puerto Rico. The association has a nine-member Executive Committee, a Task Force on State Management, and three standing committees—on Economic Development and Commerce, Human Resources, and Natural Resources. Through NGA's committees, the Governors examine and develop policy and address key state and national issues. Special task forces often are created to focus gubernatorial attention on federal legislation or on state-level issues.

The association works closely with the administration and Congress on state-federal policy issues through its offices in the Hall of the States in Washington, D.C. The association serves as a vehicle for sharing knowledge of innovative programs among the states and provides technical assistance and consultant services to Governors on a wide range of management and policy issues.

The Center for Policy Research is the research and development arm of NGA. The center is a vehicle for sharing knowledge about innovative state activities, exploring the impact of federal initiatives on state government, and providing technical assistance to states. The center works in a number of policy fields, including agriculture and rural development, economic development, education, energy and environment, health, information management, social services, trade, training and employment, and transportation. The priorities for the association's research are set by the Governors.

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Preface

In its 1993 report *The Debate on Opportunity-to-Learn Standards*, the National Governors' Association's Task Force on Education raised a number of issues for states and communities to address as they consider opportunity-to-learn strategies. One of these issues is the linkage between school finance and opportunity to learn. This report brings together a variety of viewpoints on how to finance schools and work toward providing all students with an opportunity to learn challenging material.

The Governors have been actively involved in education reform since the 1980s. The National Governors' Association (NGA) responded to the call for action in *A Nation At Risk* by documenting state reform efforts in its *Time for Results* series. During this period, a number of Governors gained reputations as "education Governors" and actively promoted the restructuring of state and local systems of public education. This focus culminated in 1990 when the nation's Governors, President George Bush, and Congress jointly approved the National Education Goals.

The National Education Goals set an ambitious agenda for reform to create a world-class education system in every state by 2000. The Governors have continued to advance this agenda in their own states and through the National Education Goals Panel, which tracks national and state progress toward the goals. NGA assists states in their efforts to reform education through published reports such as *From Rhetoric to Action: State Progress in Restructuring the Education System; Educating America: State Strategies for Achieving the National Education Goals; Transforming Education: Overcoming Barriers;* and *A Guide to Building Public Support for Education Reform*. NGA also provides direct technical assistance to Governors' offices as they explore different policy options and brings state representatives together to share information about their activities.

This report on school finance and opportunity to learn addresses the issue of creating quality education programs in all districts and schools throughout a state. The challenge for Governors and other state policymakers is to create a school finance system that provides sufficient resources for all districts and creates incentives for these resources to be spent in ways that help students achieve high educational standards. Strategies will vary among states depending on the resources available, current spending patterns and restrictions on the use of funds, and the methods most likely to motivate education progress.

The purpose of this report is to assist states in their efforts to integrate the elements of their education systems into a coherent system focused on student achievement. Each essay addresses a different strategy for linking student achievement and school finance, from traditional approaches to distributing resources to mechanisms for devolving control of how districts and schools use their resources.

Acknowledgements

To improve schools, reforms must be based on changes that improve student learning. The efforts of the essays' authors to translate their expertise into brief, policy-relevant documents provide the basis for the ongoing conversation between policymakers and researchers. The National Governors' Association (NGA) appreciates their time and contributions. NGA also wants to thank The Pew Charitable Trusts, which provided the funding for this publication.

Several NGA staff deserve special recognition. Patricia R. Brown, senior policy analyst with the Education Policy Studies Division, skillfully managed the project and worked with the authors to refine and focus their essays. The comments and advice of Barry Van Lare, deputy executive director; Paul Goren, director of the Education Policy Studies Division; and Mark Rigdon, division policy analyst, were especially valuable. Karen Glass of the Office of Public Affairs provided editorial support, helping to improve the presentation of the essays and make them reader-friendly.

Introduction

Governors have been actively engaged in education reform for more than ten years. The focus of this state- and gubernatorial-led reform movement is increased student achievement. State efforts to reform education and produce higher student achievement have led to an emphasis on systemic reform—changing the underlying premises that keep public schools in place, setting high standards, and holding schools and districts accountable for reaching those standards.

What Governors and other state policymakers have found is that reform is difficult. Virtually all aspects of education, including finance, must be restructured to support the goal of higher student achievement. Many aspects of school funding hold the education system in place. Categorical funding streams and accounting mechanisms make it difficult for districts and schools to revamp the way funds are spent. Some districts and schools lack sufficient funding to provide a quality education for all students. School sites do not have control over key financial decisions. Moreover, in most cases, education reform must be funded within current resource limits. A central challenge for Governors concerned with education reform is to rethink how schools are funded so that school finance supports education reform and high student achievement.

School Finance and Opportunity to Learn

Linking school finance and student achievement raises two issues: how to ensure that all students, regardless of where they live, have access to a quality education program and how to use resources more effectively to produce higher student achievement. Both of these issues are central to the debate on opportunity-to-learn standards.

Opportunity-to-learn standards were first debated by the National Council on Educational Standards and Testing (NCEST).[1] In its 1992 final report *Raising Standards for American Education*, the council proposed the creation of a four-pronged set of standards to encourage systemic rather than piecemeal reform. The proposed standards included academic content standards, student performance standards, school delivery standards, and system performance standards. According to the council, school delivery standards—later called opportunity-to-learn standards—should describe the conditions and practices that create school capacity to reach high academic standards so that educators and parents know what schools need to be doing.

Opportunity-to-learn standards are controversial. Advocates for disadvantaged students fear that students attending inadequate schools will not be taught the new challenging material needed to meet high academic standards, that schools will continue to operate under conditions that are not conducive to learning, and that students attending inadequate schools will be penalized for their failure to meet higher standards. Opponents fear that opportunity-to-learn standards will continue the focus on inputs and resources, inhibiting the shift to a results orientation and resulting in more regulations that restrict school flexibility and prevent schools from making the changes required to improve student achievement. They also see the imposition of opportunity-to-learn standards as a way of requiring states to spend more money on an education system that is inefficient and ineffective. State

policymakers are concerned that opportunity-to-learn standards could lead to a new wave of legal suits requiring states to increase funding for education.

Regardless of how the debate on opportunity-to-learn standards is resolved, states will continue to grapple with the issues at the heart of opportunity to learn—*how to improve the quality of public education and ensure that all students have access to an education program that will enable them to meet public expectations.* According to many state policymakers, creating the opportunity to learn is "what states do."

Schools are being asked to become both more effective and more efficient. Over the past two decades, expenditures on public education have increased substantially, even when inflation is taken into account. States now provide an average of one half the funding for public schools, with some states providing up to 70 percent of public school funding. Policymakers and taxpayers are questioning what has been achieved with this increased funding, and few states are able or willing to sustain the same rate of increase in education expenditures.

In the past, conflicts in education generally have been eased by "greasing the wheels" of the system. Both education reform and finance reform have been supported by increasing education expenditures. As schools and districts were asked to do more or to do things differently, additional funding was provided to cover at least some of these activities. Policymakers seldom asked educators to reallocate existing resources to support reform, thus avoiding competition between new and old programs. Similarly, school finance reform was typically accomplished through a "win-win" style of bargaining; all districts were given more revenue, with poor districts receiving the greatest share. In states where the tax base or public opinion has limited the state's ability to do this, finance reform has been most difficult. Given the current economic climate, today's reform initiatives face greater financial restraints. Few states have additional tax revenues they can divert to education programs.

Issues in School Finance

As policymakers and educators look at the linkages among school finance, school reform, and opportunity to learn, three questions emerge. How should financial resources be allocated to best support reform? Who should decide how resources are used? How can the public be assured that funds are being used effectively to improve student achievement?

How one answers these questions depends, in part, on how one perceives the recent debates on school finance. Traditionally, discussions of school funding formulas have focused on state responsibility for providing equitable funding across school districts. Recent requests for increased funding of schools are being met with skepticism because the evidence linking past increases to improved performance has been weak. These debates set the context for state action on school funding.

Ensuring Equity and Adequacy

State courts and legislatures have addressed the issue of providing all students with the opportunity to learn through school finance for several decades. The focus of these efforts has been to provide "equitable" resources across school districts, assuming that access to similar resources provides the basis for equal educational opportunities.

Since the 1970s, the constitutionality of state school finance systems has been challenged in thirty-six states. In fifteen states, courts have found the school finance systems to be unconstitutional because they failed to provide a "general," "thorough," or "efficient" education to all children. These states have been required to change the level and method of state funding to make more equitable resources available across all school districts, regardless of wealth. Responding to similar concerns, numerous other states have changed their school-finance systems without a court order. In these cases, the issue is one of fairness: Do all students in the state, regardless of where they live, have access to similar educational resources?

Even with these changes, the school funding formulas that are used to allocate state funds to schools permit grossly unequal expenditures across school districts. In many states, wealthy districts spend as much as $10,000 per pupil, while poorer districts in the same state spend less than $3,000 per pupil. In addition to providing more comprehensive services, high-

spending districts pay teachers more; hire teachers with more experience and education; provide more instructional support and materials; have greater access to computers, science labs, and calculators; and have lower class sizes.[2] These inequalities are mirrored in state education expenditures. Wealthy states spend twice as much per pupil as states with the lowest education expenditures, even after adjustments are made for differences in the cost of living in these states.

In several recent cases, state courts expanded their review of school finance systems to include adequacy—the level of funding—as well as the equitable distribution of resources. In these cases, states were directed to raise the minimum level of expenditures across the state to a level that would support an "adequate" education program. In Alabama and Kentucky, the state courts also called for an overhaul of the entire education system, including curriculum, instruction, professional development, and administrative support.

As in these latest school finance cases, the pertinent question for state policymakers concerned with providing all students with an opportunity to learn has more to do with adequacy than equity. The question is whether schools and districts have sufficient funding to provide a quality education program. Some states will need to increase funding for schools, while others will need to rethink how to allocate their funds more effectively to support improved student learning.

Linking School Finance and Student Achievement

Deciding how much is enough, or what level of expenditures will provide students with access to a quality education program, is complicated by the lack of a direct correlation between funding and student achievement. Among policymakers and the public, it is widely believed that past increases in funding have not produced the desired increases in education achievement.

The conclusion that money does not matter is supported by the work of such prominent scholars as Eric Hanushek. Hanushek's early work indicated that there was little or no correlation between student achievement on standardized scores and school expenditures when student background and family characteristics are taken into account. His review of other studies on this subject over the past decade support this conclusion. In his recent work, Hanushek documents that the substantial increases in education expenditures over the past decade, when averaged across the nation, have not produced increases in student achievement.[3] This study provides a powerful argument for examining school funding more closely and for limiting future education expenditures.

However, other research on the relationship between education expenditures and student achievement challenges this broad conclusion. Studies that disaggregate spending by state or district and examine a wider range of achievement measures indicate that there is a substantial relationship between education expenditures and student achievement. A recent study by Deborah Verstegen demonstrates that there is a correlation between expenditures and achievement when alternative achievement tests such as the National Assessment of Educational Progress are used instead of tests of basic skills and when the analysis is conducted using state-level data.[4] Studies that look at within-state disparities also find a link between district expenditures and student achievement.[5]

Recent evidence also suggests that student achievement has increased, especially for the groups targeted by reforms—disadvantaged students and average students. An analysis of the National Assessment of Educational Progress (NAEP) indicates that achievement is rising and that recent achievement levels have made up for the losses in student achievement during the late 1960s and 1970s. Moreover, black students and students in the middle achievement range have made the most gains, narrowing the gap with middle-class whites and high-achieving students.[6]

Other studies also support the link between funding and achievement. Expenditures on specific aspects of education are highly correlated with increased student achievement. Research shows that lower class sizes, teachers with higher academic skills, and teachers with higher education levels all have a significant

impact on student learning.[7] Sustained programmatic interventions also have been shown to improve student achievement among disadvantaged students, but these interventions usually require additional resources.

Increasingly, researchers are finding that money does matter, but how the funds are used is key to improving student achievement. Some expenditures are more productive than others. Among the areas likely to produce student performance results are raising expenditures in the lowest-spending districts, increasing spending for disadvantaged and low-achieving students, reducing class size, and hiring teachers with more expertise. Other types of expenditures, for computers and other technology, for example, also may prove promising.

The Link Between Funding and Students' Opportunity to Learn

The way states approach the use of school funding to increase the quality of education programs will vary significantly. States with highly unequal district expenditures and with very low funding for education may want to confront the issue of an adequate level of expenditures directly. States with higher spending levels across all districts may want to pay more attention to what funds are used for. Some states may want to link school finance and education reform by reducing regulations regarding how money is spent and allowing schools and districts to make those decisions, while the state focuses its efforts on monitoring progress toward results.

To assist states as they contemplate how to link school finance with the goals of education reform, the National Governors' Association invited six experts on various aspects of school finance and school reform to write essays for Governors and their advisors. The essays cover a range of topics, addressing the linkages between school finance and the state's role in providing all students with access to a quality education program. The topics include relating inequities to student achievement in one state; expanding categorical programs; targeting expenditures to improve teacher expertise; devolving funding and curriculum choices to local school sites through site-based management, choice, and charter schools; and focusing accountability efforts on teaching and learning to ensure that money is spent productively.

Robert Berne, dean of the Robert F. Wagner Graduate School of Public Service at New York University, documents the context of school finance reform in one state. He examines financial disparities in New York State and the linkages among these disparities, district size and student composition, and student achievement. He argues that gross inequities must be corrected as an essential element of any school finance system that purports to guarantee all students access to a quality education program.

William H. Clune, professor of law at the University of Wisconsin Law School, provides a state funding formula for addressing the issue of adequacy and the differential needs of students. He proposes a compensatory aid package for use with current funding formulas to provide extra resources to schools and districts with a large proportion of students with high educational needs. He argues that this type of additional funding is needed to provide the necessary conditions for disadvantaged students to master the challenging educational material being proposed in states' new curriculum frameworks and student performance standards.

Linda Darling-Hammond, professor of education at Columbia University, proposes ways for states to link funding to the resource that is most critical for improving student achievement—teacher expertise. Typically, the highest-spending and highest-achieving schools and districts also hire the most qualified teachers. She argues that providing all schools and districts with qualified teachers is essential for ensuring equal access to an effective learning environment. She proposes a variety of equalizing mechanisms for states to use, including teacher recruitment policies, salary equalization programs, mentoring programs for beginning teachers, and improved professional development for all teachers. She suggests that funding such programs at the state level will improve the supply and distribution of qualified teachers across both rich and poor districts.

Allan R. Odden, co-director of the Finance Center of the Consortium for Policy Research in Education, discusses site-based management as one mechanism for school-based reform. He outlines the scope of decisionmaking authority that must be devolved to the school site if site-based management is to be truly effective. He argues that if schools are to transform themselves, they must have control over key decisions related to funding, staffing, professional development, curriculum, structure, and management. Most site-based management experiments have not given schools authority over these key decisions, especially funding.

Jeanne Allen, president of the Center for Education Reform in Washington, D.C., reviews two mechanisms for enhancing site-based management and accelerating school-by-school reform. She says that by providing school choice to parents and students, districts send a clear signal to schools that they must improve. Further, she suggests that charter schools are a radical way to provide parents choice and control over their children's opportunity to learn. Charter schools are created outside of a state's regulatory framework, giving parents and other entrepreneurs authority over the structure and process of education in the school. She describes how several states have provided funding for charter schools.

Andrew C. Porter, professor of educational psychology at the University of Wisconsin-Madison, advises states to focus current and future funding on the aspects of school that are most closely related to student achievement. He believes that if schools are held responsible for providing quality instruction through an accountability system, attention and resources will be directed to more effective practices. His accountability strategy looks directly at classroom practices in a way that informs teachers and principals about the quality of instruction, provides guidelines for improved instruction, and addresses student achievement as the measure of opportunity to learn in school classrooms. Although accountability is not directly linked to school funding, it is an essential aspect of deregulation and promotes a focus on results. He argues that such an accountability system would lead to improved student achievement.

Each essay addresses an area related to school funding in which states are currently experimenting. All of the authors argue that changes in current funding practices for schools could enhance the link between student achievement and school funding. Current school finance methods create a barrier to reform by focusing on inputs and the distribution of resources. By analyzing each method, state policymakers can assess which method, if any, might be useful in their attempts to improve the efficiency and effectiveness of school funding.

Endnotes

1 The National Council on Educational Standards and Testing was composed of Governors, senators, representatives, local educators, business representatives, researchers, and representatives of major education organizations. The mission of the council was to investigate strategies for reaching goals three and four of the National Education Goals relating to student achievement and citizenship and science and mathematics, respectively.

2 W.T. Hartman, "District Spending Disparities: What Do the Dollars Buy?" *Journal of Education Finance 13* (1988): 436-59; and W.T. Hartman, "District Spending Disparities Revisited," *Journal of Education Finance 20* (1994): 88-106.

3 Eric A. Hanushek, *Making Schools Work* (Washington, D.C.: The Brookings Institution, 1994).

4 Deborah Verstegen, "Efficiency and Equity in the Provision and Reform of American Schooling," *Journal of Education Finance 20* (1994): 107-31.

5 Robert Berne and Lawrence Picus, *Outcome Equity in Education* (Newbury Park, Calif.: Corwin Press, 1994).

6 David W. Grissmer, Sheila Nataraj Kirby, Mark Berends, and Stephanie Wilson, *Student Achievement and the Changing American Family* (Santa Monica, Calif.: The Rand Corporation, 1994).

7 Ronald F. Ferguson and Helen F. Ladd, "Additional Evidence on How and Why Money Matters: A Production Function Analysis of Alabama Schools" (paper presented at The Brookings Institution conference on "Performance-Based Approaches to School Reform," Washington, D.C., April 6-7, 1995).

Robert Berne

Robert Berne is dean of the Robert F. Wagner Graduate School of Public Service at New York University, where he has been on the faculty since 1976. He served as associate dean from 1988 to 1993.

Berne is a nationally recognized expert in education policy research. He has served on numerous public boards and commissions to address issues of public finance and governance. Most recently, he served as executive director of the New York State Temporary Commission on New York City School Governance and as director of policy research for the New York State Temporary Commission on the Distribution of School Aid.

He is also an active researcher in government finance. In 1992 he completed a study for the Governmental Accounting Standards Board, The Relationships between Financial Reporting and the Measurement of Financial Condition.

Berne is co-author, with Laura Stiefel, of The Financial Analysis of Governments. *His research has been published in numerous journals, including the* Journal of Policy Analysis and Management, Policy Analysis, Policy Sciences, Public Administration Review, Journal of Education Finance, *and* Public Budgeting & Finance.

A Focus on Resources and Student Achievement

In New York, as in other states, there are serious disparities in the revenues available to different school districts. Districts with large numbers of poor and minority students spend less than other districts. Students in low-spending districts also do not do as well based on a variety of measures of student performance. Efforts to improve schools should not ignore these disparities in resources if they hope to create quality education programs in all districts.

Wake-Up Calls to American Public Education

American public education has been jolted by several wake-up calls since World War II. The U.S. Supreme Court decision in *Brown v. Board of Education* challenged then-accepted practices of segregation and discrimination, and the launching of the Sputnik satellite by the former Soviet Union demanded a change in math and science education. More recently, *A Nation At Risk* and subsequent reports woke us up to the fact that the performance of American public schools was insufficient to meet global competition. Over the past dozen or so years, we have come to realize that teaching and learning in schools will not automatically adjust to rising demands.

In the early 1980s, the education policy debate focused almost exclusively on achievement. Although it is difficult to project the full ramifications of the November 1994 elections, the current education policy discussions are broader than those of the early 1980s in several ways. First, there is a broad consensus that a decentralized, school-centered policy and management structure will contribute to improved educational outcomes. Second, there is a recognition that new forms of accountability are needed. Third, we acknowledge that child development begins before a child reaches public-school age and that non-school factors are important for school-age children. Fourth, equity, a fundamental value in American public education, has returned alongside achievement as an important policy objective.

The Opportunity-to-Learn Debate

The debate on opportunity-to-learn standards can be viewed as the result of the emergence of these four factors. Education policies, including the idea of opportunity to learn, are trying to combine actions that improve education performance, governance, accountability, and equity. But even before we develop policies to achieve outcome equity or seriously debate the opportunity-to-learn concept, it is important to acknowledge that currently we have dollar, resource, and outcome inequities that are serious and that have resisted change despite the repeated wake-up calls. The discussions of professional development, more challenging and developmentally appropriate curricula, decentralized governance and management, site-based budgets, and accountability should not ignore the real inequities that exist in most states, that have persisted over time, and that can be measured even without agreement on new opportunity-to-learn concepts.

As part of this process in New York State, Education Commissioner Thomas Sobol appointed a Study Group on Outcome Equity to answer three questions.

- Can we develop definitions of educational outcomes and outcome equity?
- Can we identify the alternative policies and programs that are aimed at redressing outcome inequities?

- What actions are needed to allocate resources to support policies and programs that produce outcome equity?

Similar to the arguments raised around opportunity to learn, the work of the study group moved away from the historical focus on input equity and also acknowledged that outcomes could not be addressed without considering equity. The study group concluded that an essential requirement for outcome equity is equity of material and human resources. Equity is not equality. Instead resources should be matched to needs. Differential resources may be necessary to meet different needs, but the need for resources is not correlated with resource availability. Equity requires a rearrangement of resource distribution and use, and it should encourage local decisionmaking.

Equity is not equality, in part, because all children are not alike. Yet to the degree that inequities are ignored or reinforced by public interventions, we run the risk that we will wake up too late. Jonathan Kozol's book, *Savage Inequalities*, provides rich descriptions of the worst cases of inequity. What makes his arguments all the more compelling is that they can be supported by broader statistical analyses that show the pervasiveness of the problems. Using data from New York State that are gathered and reported by the state in *New York, The State of Learning: Statewide Profile of the Educational System*, the extent of current dollar, resource, and outcome inequities can be documented.

Dollar Inequities

For the past fifty years, educational equity within states has been measured using revenues and expenditures. There are different ways to assess educational equity, and the simplest way is to assess the differences in revenues and expenditures per pupil among districts in a state. In 1991-92, the latest year for which data are available, expenditures per pupil in New York State at the tenth percentile of expenditures was $6,351 per pupil, compared with $11,897 per pupil at the ninetieth percentile of expenditures. A different way to see the inequities in spending in New York State is to compare expenditures in New York City, where there are above-average pupil needs in terms of poverty, special education, and languages spoken other than English, with the statewide average. In 1991-92 expenditures per pupil in New York City were $7,495, compared with the statewide average of $8,241.

Comparisons of expenditures per pupil do not adjust for pupil need. New York State divides its districts into three groups according to the relationship between pupil needs, which is measured by pupils in poverty, and available resources, which is measured by the full value of property and personal income per pupil. The three categories are high needs relative to available resources, average needs relative to available resources, and low needs relative to available resources. New York City and the other four large city districts were excluded from this comparison. The median district in the low needs relative to available resources category spent more than $3,000 per pupil more than the median district in the two other categories.

Resource Inequities

An important question is how these dollar inequities translate into resources. Based on various resource measures reported by New York State, the linkages between dollars and resources is apparent.

Class size is one commonly used method to assess the level of resources in public education. In 1991-92 in New York State, the average class size in kindergarten was 22.2 children. In grades one through six it was 24.2; in seventh-grade English it was 23.9; and in high school biology it was 24.6. In New York City, in every one of these categories, class size was substantially higher: 25.2 in kindergarten; 28.2 in grades one through six; 30.5 in seventh-grade English; and 31.6 in high school biology. By contrast, the average class size in the suburban districts is consistently smaller than the statewide average: 20.8 in kindergarten; 22.7 in grades one through six; 22.1 in seventh-grade English; and 22.8 in high school biology.

Teacher characteristics are a second way to assess educational resources. Statewide, 8.1 percent of teachers were not licensed or certified in 1992-93, compared with 14.0 percent in New York City and 4.0 percent in the suburban districts. Teacher turnover statewide was 8 percent in 1992-93, while it was 13 percent in New York City and 7 percent in the suburbs.

These teacher characteristics are also related to the racial/ethnic composition of the schools. Statewide, in schools with a low percent of minority enrollment—less than 20 percent of the pupils—4.2 percent of the teachers were not licensed or certified, and the teacher turnover rate was 11 percent. In schools with a high percent of minority enrollment—more than 80 percent minority—11.8 percent of the teachers were not licensed or certified, and the teacher turnover rate was 17 percent. Similar differences are evident within New York City. In New York City schools with a low percent of minority enrollment, the percent of teachers not licensed or certified was 2.3 percent, and the teacher turnover rate was 9 percent. In New York City schools with a high percent of minority enrollment, the percent of teachers without license or certification was 12.3 percent, and the teacher turnover rate was 17 percent.

Resource differences are also evident with respect to technology and library books. In New York State in 1992-93, there were 12.3 pupils per microcomputer, compared with 17.7 pupils per microcomputer in New York City and 10.8 pupils per microcomputer in the suburban districts. Similar differences existed for television sets and video recorders, and the pattern for library books was the same. In New York State in 1992, there were 15.9 library books per pupil, compared with 9.5 library books per pupil in New York City and 20.6 library books per pupil in the suburban districts.

Outcome Inequities

The patterns documented for dollars and resources are replicated for a variety of educational outcomes measured by the state of New York in 1992-93. Outcomes are not going to be equal among a group of students, and therefore outcome equity is not equality. But outcomes can be judged to be inequitable when they are systematically related to social distinctions such as race, class, ethnicity, and gender.

In the case of the statewide reading test administered in the third grade, 82 percent of the pupils scored above the state reference point statewide, compared with 65 percent in New York City and 93 percent in the suburban districts. The state reference point is set to establish a level below which a pupil is in need of remediation or is judged not to be making satisfactory progress. The tests also are scored to measure a mastery level and the percentages in this category were 31 percent statewide, 18 percent in New York City, and 41 percent in the suburban districts.

The third-grade reading scores also show the strong relationship between outcomes and pupil poverty and pupil racial/ethnic composition. In five groups of schools in the state defined by percentage of poverty (0 percent to 20 percent, 20 percent to 40 percent, etc.), the percentages of pupils scoring above the statewide reference point were 91.3, 81.1, 66.6, 59.5, and 55.2, from low to high poverty, respectively. Statewide in the five groups of schools defined by percentage of minority pupils, the percentages of pupils scoring above the statewide reference point were 92.7, 88.4, 83.8, 74.0, and 58.4, from low to high minority, respectively.

High school dropout rates display similar patterns. The annual dropout rate in 1991-92 was 4.0 percent statewide, 6.2 percent in New York City, and 1.8 percent in the suburban districts. Statewide in low-poverty schools (0 percent to 20 percent poverty), the annual dropout rate was 2.2 percent. In mid-poverty schools (20 percent to 40 percent), it was 4.3 percent; in high-poverty schools (40 percent to 100 percent), the annual dropout rate was 7.0 percent. Statewide in the five groups of schools defined by percentage of minority pupils, the annual dropout rates were 2.1 percent, 2.9 percent, 3.3 percent, 4.4 percent,

and 8.1 percent, from low to high minority, respectively.

Finally, the same pattern is evident in the participation in and performance on New York State's Regents exams, statewide tests that are administered in twenty subjects. The state also administers different, less rigorous high school exams, known as Regents competency exams, and a small percentage of the education community does not offer the Regents exams because it believes they are too constraining educationally. Nevertheless, the record on the more rigorous Regents exams is a valid measure of outcomes across the state.

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In the Regents exam in comprehensive English, 42.0 percent of average enrollment passed the test statewide in 1993, compared with 19.3 percent in New York City and 58.4 percent in the suburban districts. The comparable passing rates on the Regents exam in sequential math III were 29.3 percent, 14.8 percent, and 41.2 percent statewide, in New York City, and in the suburban districts, respectively. The passing rates on the Regents exam in biology were 40.3 percent, 19.1 percent, and 56.4 percent, statewide, in New York City, and in the suburban districts, respectively.

There were also strong patterns according to pupil poverty and pupil racial/ethnic composition. Statewide on the Regents comprehensive English exam, the percentages of average enrollment passing across the five groups of schools by poverty levels were 51.9, 33.6, 22.3, 13.6, and 5.7, from low to high poverty, respectively. Statewide in the five groups of schools defined by percentages of minority pupils, the percentages of average enrollment passing the Regents comprehensive English exam were 57.8, 54.3, 32.0, 27.9, and 14.2, from low to high minority, respectively.

Conclusions

As we approach the year 2000 and continue our debate on opportunity to learn, certain facts should not be left by the wayside. The research reported here supports the findings that New York's public primary and secondary education system, like other states, suffers from serious input and outcome inequities. This analysis covers expenditures per pupil, class size, teacher characteristics, library books, classroom technology, and various measures of outcomes. It shows the lower levels of resources in New York City and other urban areas, where most of the state's poor and minority students attend school. On the outcome side, there are strong and consistent relationships among a variety of outcomes, including elementary school test scores, dropout rates, and high school test scores on the one hand, and district type, poverty status, and minority composition on the other.

For almost all outcome measures, New York City (and the large urban districts that were not analyzed in this essay), the high-poverty schools and the predominantly minority schools performed at substantially lower levels. For a state such as New York that has taken pride in its response to pupils in need, the results present a difficult challenge for policymakers and educators. Reformers in the state have tried to address some of these inequities on the input side, but neither the courts nor the legislature has been willing to move the state's resources toward a significant reduction of the inequities.

The state's commissioner of education and board of regents have adopted *A New Compact for Learning* that states, "Students of both genders and all socioeconomic and racial/ethnic backgrounds will show similar achievement on state assessment measures." It is clear that in New York, many students do not have an opportunity to learn as most of us would define it. In many other states, the findings probably are similar. Only time will tell whether America will sleep through this wake-up call.

Resources for Further Reading

Berne, Robert, and Lawrence Picus, eds. *Outcome Equity in Education*. Newbury Park, Calif.: Corwin Press, 1994.

Kozol, Jonathan. *Savage Inequalities*. New York: Crown Publishers, 1991.

New York State Education Department. *New York, The State of Learning: Statewide Profile of the Educational System*. Albany, February 1994.

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Providing Opportunity to Learn Through Compensatory Aid

Sufficient resources are a key element in creating quality education programs for students with special needs or educationally disadvantaged backgrounds. One strategy is to provide compensatory aid that gives substantial extra resources to schools with a high concentration of poor children. These additional resources are necessary to develop and sustain an education program that will enhance the learning of poor children.

Opportunity to learn requires a substantial amount of compensatory aid for poor children, specifically for high-poverty schools. State systemic education reform, by itself, will not produce high minimum educational achievement. This essay suggests an approach for states to use in designing a system of compensatory aid that will provide additional resources to students who need the most help.

The Need for Compensatory Aid and Accelerated Education

"Opportunity" and "learn" are closely related for most children. In most cases, the embedded curriculum is well-correlated with student achievement. If schools teach algebra and writing, students will learn to do algebra and to write within an acceptable range of performance. Consequently, much of the research on systemic reform focuses on how to implement the new curriculum content and teaching methods.

Yet many poor children quickly fall far behind their peers in schooling and never become qualified to study algebra or advanced writing. Many poor students either drop out of school or take remedial classes even in high school. For such students, high standards are an impossible dream or a cruel joke. These students require accelerated education to help them keep pace with the educational mainstream, for example, intensive early intervention in skills of numeracy and literacy. Without accelerated education to help all children master the curriculum, systemic reform will mean watching poor children fail.

The Cost/Quality Issue and Policies Aimed at Increased Efficiency

In most states, high-poverty schools are funded at about the state average, but student achievement in these schools is far below the average. Obviously, equal funding does not produce equal results. Would extra money lead to higher scores? Despite current debates on the general cost/quality relationship and IQ, there is no serious dispute that practically all children can reach minimally competent levels of literacy and numeracy with appropriate instruction and assistance. However, to guarantee that additional money does produce high minimum outcomes, the state probably needs to enact policies that encourage schools to adopt effective accelerated education.

Focus on High-Poverty Schools

There are strong policy reasons for focusing compensatory aid on high-poverty schools. High-poverty schools have the greatest numbers of students requiring accelerated education and face high restructuring costs, such as for a schoolwide program of accelerated education, safety, social services, and parental outreach. Further, a universal program of compensatory aid that provides a certain amount to every student in the state, though politically attractive, may dilute the level of compensatory aid below what is necessary for effective accelerated education in high-poverty schools.

The Design of Compensatory Aid

Base Funding and the "Three 90s"

Compensatory aid is not compensatory unless it is built on a base of equal funding. The best way to provide an adequate base for high-poverty schools is to design a statewide system of horizontal equity that also builds political support by offering benefits to many families, students, and taxpayers throughout the state. Odden and Clune have suggested one such plan, which also offers affordable cost and cost controls. This plan cannot be fully described here, but conceptually it is based on "the three 90s":

- a foundation plan at the ninetieth percentile of rural wealth;
- a guaranteed tax base (GTB) at the ninetieth percentile of statewide wealth; and
- a funding level supported by the GTB at the ninetieth percentile of statewide spending.

Cost controls and assessment-driven levy rollbacks are also recommended. This plan offers adequate minimum spending and tax relief to rural districts, reflects the extra costs of urban and suburban districts, and avoids the revenue demands of both unlimited GTB and equalization with the wealthiest districts.

A Categorical Grant for Accelerated Instruction

The heart of the compensatory aid package is a categorical grant for accelerated instruction. The ideal size of this grant is difficult to compute because of a lack of knowledge about the true costs of minimum achievement and varying degrees of efficiency in schools. There is a danger of underspending, thus producing poor results and political resistance, as well as of overspending, thus inviting inefficiency. Analysis of better-funded programs of accelerated education suggests that the grant should be approximately $2,000 for each poor student. Typical costs covered by this type of grant include catch-up tutoring, schoolwide program management, professional development, and parental outreach.

Accountability and governance mechanisms should be established to ensure that this money is indeed spent on effective programs of accelerated instruction. The recommended amount of $2,000 per pupil includes federal Title I funds, as well as existing state compensatory aid, and thus should require substantially less new compensatory aid from the state. Over time the state should monitor and collaborate with high-poverty schools to determine whether adequate results are being achieved, whether money is being spent effectively, and whether a larger categorical grant is needed.

A Separate Audit and Aid for Physical Plant

Comfortable classrooms do not directly produce student achievement but are a necessary platform for accelerated instruction. In many states, school finance reform has been hampered by local districts' need to spend a substantial proportion of new monies on classroom space and maintenance. The most effective way to address inadequate physical facilities is a separate audit of the needs of each high-poverty school against minimum standards of adequate facilities. Based on this audit, the state and the local district should share the costs of capital and maintenance on an equitable basis.

Funding for Books and Instructional Materials

Cost-cutting measures have reduced the extent to which public schools provide students with texts and instructional materials. In some communities, students are using texts that are woefully out-of-date. In other communities, they cannot take the texts out of the classroom so that homework and practice are limited. Very poor families cannot afford such resources, with devastating effects on student learning, and many urban teachers try to provide materials from their own funds. The state should give each high-poverty school separate funds to pay for books and instructional materials and should conduct audits to ensure that the schools actually provide these resources to the students.

Funding for Targeted Professional Development

The state should set aside funds for professional development as part of systemic reform for every school (e.g., 1 percent to 2 percent

of the operating budgets), and schools should have discretion in spending the money. High-poverty schools need more than other schools because of the extra instructional demands on the teachers. Adequate funds for professional development should stimulate networks of qualified suppliers of technical assistance to enter the market.

Special Funding and Management for Highly Mobile Students

High-poverty schools have high rates of student mobility, resulting in interrupted instruction for many students. Some intradistrict mobility problems can be solved through special attendance rules and transportation systems enabling students to remain in the same school despite a change in residence. Other problems may require adjustments in instruction so that transiency is less disruptive (e.g., shorter modules offered districtwide). States and districts should provide funds to study the problems of mobility and design and pay for solutions.

Salary Bonuses for Qualified Teachers

High-poverty schools also have high rates of teacher mobility, and experienced teachers help improve student achievement. The state should begin experimenting with salary bonuses for hiring and retaining qualified teachers. Increasing the number of qualified applicants per position and reducing turnover during the first five years of teaching should be included among the objectives. The state should condition the receipt of these funds on an audit of the personnel system to ensure that it is capable of hiring and retaining qualified people.

Incentives for Superior School Performance

Separate funds should be set aside as group rewards for exceptional performance in raising student achievement, taking into account student demographics. Models of such incentives exist in various districts and states can guide their design in other locations.

Assessment, Accountability, and Governance

Because the sole purpose of compensatory aid described here is raising student achievement to adequate high minimum levels, the state must monitor progress in student achievement in an objective manner. Various alternatives exist for such monitoring, including using standardized tests in particular subjects, employing new state assessments, and sampling student work. Intervention mechanisms should be designed for schools showing a notable lack of progress. Again, models exist in various places. Governance should be designed to improve performance and accountability, for example, strong site management, charters, family choice, and privatization.

Slack in Existing School Budgets

There is substantial slack in some school budgets. For example, class size may be inefficiently managed, especially in special education, and support personnel may be underutilized. States and districts should conduct studies to make spending in high-poverty schools more efficient. Any efficiencies discovered could reduce costs, raise the funding of effective services, and raise political support for the entire program of compensatory aid.

Continued Development of Preschool and School-Linked Services

Preschool and school-linked social services probably are as important for the achievement of poor children as is superior academic education in regular school. Generalizations about the amount of money needed are difficult to make, however, because the extent of need varies from place to place and delivery systems for school-linked services are just now being designed and implemented. Yet the severe needs of high-poverty schools require a special initiative to assess needs and develop programs. If states want good results on student achievement, the development of these supplementary programs cannot be postponed indefinitely.

Coordination with Federal Aid

Much federal aid already flows to high-poverty schools, especially from Chapter 1, special education, and social service programs. To the extent that these funds are designed to pay for the same objectives and services as state compensatory aid, the state share can be reduced.

Much funding for special education already may be spent essentially for accelerated or remedial education. Yet caution should be exercised about the danger of diverting funds for the legitimate special needs of genuinely handicapped children. Research and analysis may be needed before coming up with firm policies.

Conclusions

Designing a compensatory aid program is complicated. Logically, it would work best beginning with younger children so that the advantages of good preparation are available in later years. These factors suggest that phased development and implementation is best to allow time for school planning, the debugging of state policies, and the monitoring of results. Research suggests, for example, that many schools are completely unprepared for the influx of new money available from the reform of educational finance and consequently spend money in a haphazard fashion.

Offsetting the factors supporting a phased implementation is the great need of poor children in high-poverty schools and the large benefits to society of much better educated workers and citizens. The required mix of urgency and careful planning can be described in the terms of the *Brown* decision—we must move with "all deliberate speed" to improve the educational achievement of poor and minority children in the United States. Without a program of funding similar to the compensatory aid package described here, poor and minority students will not have an opportunity to learn and achieve at the high standards being proposed.

Resources for Further Reading

Berne, Robert. "Program Equity for All Children: Meaningful Goal or Impossible Dream?" *Educational Policy 8* (4): 502-17.

Clune, William H. "Introduction, Educational Adequacy: A Theory and Its Remedies." *University of Michigan Journal of Law Reform*, in press.

Madden, N.A., R.E. Slavin, N.L. Karweit, L. J. Dolan, and B.A. Wasik. "Success for All." *Phi Delta Kappan 72* (8): 593-99.

Slavin, R.E., L.J. Dolan, and N.A. Madden, "Scaling Up: Lessons Learned in the Dissemination of Success for All." Paper prepared for the Center for Research on the Education of Students Placed at Risk, The Johns Hopkins University, Baltimore, Md., November 1994.

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The Role of Teacher Expertise and Experience in Students' Opportunity to Learn

Teacher expertise is a critical factor in student learning. Teachers with more experience and more education are more effective in the classroom and students learn more from them. Higher spending districts with low minority enrollments hire and retain more experienced teachers. Efforts to increase students' opportunity to learn should focus on strategies to assist poor districts hire and support better-prepared teachers.

Teachers' knowledge and experience affect students' opportunity to learn. More experienced and more knowledgeable teachers are able to provide higher quality instruction that results in more learning on the part of students. However, this resource costs money. School finance strategies can enhance a district's ability to hire and retain better-qualified teachers, thus increasing the number of students who have increased opportunity to learn. States can use a variety of strategies to enable districts to purchase this resource, including:

- supporting the distribution of well-prepared teachers to all students through recruitment incentives and salary equalization aid;
- supporting mentoring programs for beginning teachers whose inexperience, when coupled with a lack of expert guidance, affects what students have the opportunity to learn; and
- creating greater teacher expertise through incentives for standards-based professional development and professional certification.

How Teacher Qualifications Affect Achievement

Recent research has shown that one of the most important ways in which money makes a difference in student achievement is through the hiring and training of more highly qualified teachers. In one of the largest-scale studies of the past decade, Ronald Ferguson found that the single most important measurable cause of increased student learning was teacher expertise, measured by teacher experience and master's degrees as well as teacher performance on a statewide teacher examination. He concluded, "[W]hat the evidence here suggests most strongly is that teacher quality matters and should be a major focus of efforts to upgrade the quality of schooling. Skilled teachers are the most critical of all schooling inputs."[1]

Other studies have produced similar findings. For example, when Armour-Thomas and colleagues compared a group of exceptionally effective elementary schools to a group of low-achieving schools with similar demographic characteristics in New York City, they found that differences in teacher qualifications and experience accounted for roughly 90 percent of the variance in student reading and mathematics scores at grades three, six, and eight. Far more than any other factor, teacher expertise made the difference in what children learned.[2]

Research indicates that differences in the quality of teaching students receive are a major cause of differences in their educational outcomes and that such differences are associated with the extent and quality of preparation teachers have received. Other studies have

found that fully prepared and certified teachers are more successful with students than are teachers without full preparation. Teacher preparation in both subject matter and teaching methods has a significant effect on student achievement in virtually all subject areas, especially on the teaching of higher order thinking skills. In addition, the typical problems of beginning teachers are lessened for those who have had adequate preparation prior to entry.

There are measurable differences in what fully prepared and underprepared teachers do in the classroom. Teachers who have had full preparation in their subject area, teaching methods, understanding of learning and child development, and supervised clinical practice are more skillful and more sensitive to students' needs and individual differences. Teachers who enter without full preparation are more likely to have difficulty with curriculum development, pedagogical content knowledge, teaching for different learning styles, classroom management, and student motivation.

Underprepared teachers are less able to plan and redirect instruction to meet students' needs and less aware of the need to do so, less able to anticipate students' knowledge and potential difficulties, less skilled in implementing instruction, and more likely to blame the students if their teaching is not successful. This impacts their students' achievement, especially in school-based subjects—those subjects students tend to learn primarily in school rather than through informal learning outside of school—such as mathematics, science, and early reading.

Experience also makes a difference for teaching effectiveness and for equal opportunity to learn. As Murnane and Phillips note,

> The question of whether teachers become more productive as they gain teaching experience has been of interest to policymakers for many years. One reason is that schools serving children from low-income families have typically been staffed with less experienced teachers than schools serving middle-class children. This has led to court tests of whether the uneven distribution of teaching experience constitutes discrimination against low-income children.[3]

Studies have consistently found that new teachers—those with fewer than three years of experience—tend to be less effective than more experienced teachers, especially when they are underprepared and unsupported during their initial year of teaching.[4]

Both preservice preparation and on-the-job mentoring of beginning teachers increase their effectiveness. Induction support for entering teachers improves the quality of their teaching.[5] Beginning teachers who receive such support move more quickly from concerns about discipline and basic classroom management to concerns about instruction and student progress.[6] In addition, research indicates that beginning teachers who have had a thorough university-based teacher preparation experience coupled with a mentor during their first year of teaching are significantly more effective than beginners who have had only a mentor or only university preparation.[7] Adequate preservice preparation plus first-year mentoring make a substantial difference in students' opportunity to learn.

The Extent of Inequality in Access to Well-Prepared Teachers

Despite the importance of teacher knowledge for student learning, shockingly large numbers of teachers are hired each year without adequate preparation for their jobs. In recent years, more than 50,000 of roughly 200,000 new hires annually have entered with emergency or substandard licenses, most of them assigned to teach low-income and minority students in central cities and poor rural districts.[8] This practice clearly exacerbates unequal opportunities to learn.

Not surprisingly, these unlicensed teachers are concentrated in shortage fields. In 1991 one third or more of all new teachers assigned to teach mathematics, science, social studies, physical education, and special education were neither certified nor eligible for certification in those fields. These unlicensed entrants not only lacked special preparation for teaching, but they also had significantly lower grade

point averages in college than other new teachers.[9]

These problems affect a significant number of schools and children. Overall, 15 percent of all schools and 23 percent of central-city schools reported in 1991 that they had vacancies they could not fill with a qualified teacher.[10] To deal with these shortages, principals hire less-qualified teachers, use substitutes, cancel courses, raise class sizes, or ask other teachers to teach outside their field of preparation. One in five public school teachers reported in 1987-88 that they were not teaching in the area in which they felt best qualified. As a result of these problems, inner-city high school students in high-minority schools, for example, have only have a 50 percent chance of being taught by a qualified mathematics or science teacher.[11]

In addition, because many of the more expert and experienced teachers transfer to more desirable schools and districts when they are able, new teachers typically are given the most difficult teaching assignments in schools that offer the fewest supports.[12] Because they confront challenging assignments without mentors or other assistance, attrition rates for new teachers, especially in cities, average between 40 percent and 50 percent over the first five years of teaching.[13] This adds additional problems of staff instability to the already difficult circumstances in which central-city youth attend school. Emergency hiring, assignment of teachers outside their fields of preparation, and high turnover in underfunded schools conspire to produce a situation in which many poor and minority students are taught throughout their entire school careers by a steady stream of the least qualified and experienced teachers.[14]

Funding Policies to Enhance Opportunity to Learn

School finance strategies can be used to enhance equal access to well-qualified teachers and to increase the overall supply of such teachers.

Equal access to well-qualified teachers can be enhanced through recruitment incentives for locations and fields experiencing shortages. Successful recruitment incentives include scholarships and forgivable loans that subsidize the preparation of teachers who agree to teach in targeted districts experiencing shortages and in targeted teaching fields, such as mathematics, science, and special education. As in the National Defense Education Act loans of the 1960s and 1970s, candidates' loan obligations from their undergraduate or graduate school teacher preparation programs are reduced for each year that they teach in a high-need location and/or teaching field. States also can finance the preparation and licensing of promising recruits, such as paraprofessionals, who already are working in high-need urban and rural districts, and the retraining of teachers already in such districts for teaching fields that are in higher demand than the ones they initially prepared to teach. This can reduce out-of-field teaching. Both of these kinds of incentive programs have proven to be high-yield ways of recruiting qualified teachers to urban and rural classrooms.

Another strategy is *salary equalization* as a focus of funding equalization. This strategy targets new and more equalized funding to the purchase of qualified teachers by directly supporting more equalized salaries across districts. A number of states made inroads in equalizing districts' capacity to buy qualified teachers when they introduced minimum statewide salary schedules during the 1980s that began to reduce shortages of teachers.[15] Connecticut's 1986 Education Enhancement Act provides a particularly useful illustration of how targeted and equalizing funding can make a substantial difference. Its strategy was to provide funds to districts on an equalizing formula basis for raising minimum beginning salaries statewide, while simultaneously raising standards for teacher preparation and licensing. Within three years, shortages of teachers, including those that had plagued urban areas, largely evaporated even while the quality of entering teachers was increasing with strengthened standards. By 1989 many teaching fields showed surpluses, leading the state to consider ending its alternative certification program, because it no longer appeared necessary to staff schools.[16]

Funding for beginning teacher induction and mentoring can improve teacher retention and effectiveness by providing better clinical training and support during the beginning teaching stage when 30 percent to 50 percent of beginning teachers drop out. Funding for internship programs that provide structured coaching and mentoring can accomplish two major goals that will enhance students' opportunity to learn: it can increase the supply of quality teachers by ensuring that teachers become more effective initially and over the long term, and it can reduce the extent of ongoing shortages and the need for continual hiring of underqualified teachers by reducing the high attrition rates of beginning teachers and thus the gaps between annual supply and demand.

Programs that provide intensive mentoring and support for beginning teachers increase teacher effectiveness with students and dramatically reduce beginning teacher attrition. Such programs generally fund released time for expert veteran teachers to work with new entrants, and sometimes also fund released time for new teachers. New models for teacher induction create professional development school sites where teachers complete an internship year with continuing support from both university- and school-based faculty.[17] Many of these sites are located in high-need areas. Some states are considering how to fund professional development schools with special formula allocations, similar to those granted teaching hospitals in medical training, and how to fund internship positions that build in time and mentoring supports for beginning teachers.

Because most beginning teachers are hired in more disadvantaged schools where turnover rates are highest, beginning teacher induction programs also address a major source of inequality in students' opportunity to learn. As their teachers become more skilled and stay in teaching longer, students experience better teaching in a more stable teaching environment.

Incentives for standards-based preparation and professional development can improve teachers' knowledge and skills by encouraging schools of education to upgrade the preparation they provide and by encouraging teachers to undertake additional inservice training that is directly related to their teaching effectiveness. States and districts already spend substantial funds for teacher education, for the additional salary teachers receive for taking professional development credits, and for the licensing and program approval functions state agencies perform. All of these endeavors can be leveraged so that they more directly incorporate new professional standards for teachers that are linked to new standards for students and that build directly on knowledge about effective teaching.

Such standards recently have been developed by the National Board for Professional Teaching Standards (NBPTS), which will begin offering advanced certification of accomplished practice for veteran teachers in 1995. NBPTS standards have been translated into licensing standards for beginning teachers by a consortium of more than thirty states participating in the Interstate New Teacher Assessment and Support Consortium (INTASC). The National Council for Accreditation of Teacher Education (NCATE) also has incorporated the INTASC standards into its new accreditation standards, thus creating the possibility for a coherent system of teaching standards from preservice preparation through licensing and ongoing professional development.

States can take advantage of these initiatives with very modest financial investments by:

- providing funding for teachers to undertake the rigorous process of becoming National Board-certified;
- allocating professional development credits for taking and passing the National Board assessment;
- funding the redesign of state licensing and teacher testing to incorporate the new standards developed by INTASC;
- providing incentives for schools of education to undertake accreditation that incorporates these standards; and
- funding standards-based professional development initiatives through all of the various providers of learning opportunities for teachers.

Conclusions

The interaction between teachers and students is an important aspect of effective schooling. Reducing inequality in learning has to rely on policies that provide equal access to competent, well-supported teachers and develop a greater supply of such teachers. The public education system should be able to guarantee that every child who is compelled by law to go to school is taught by someone who is prepared and knowledgeable. Funding strategies targeted to providing competent teachers can make a significant difference in opportunity to learn.

Resources for Further Reading

Darling-Hammond, Linda. "Inequality and Access to Knowledge." In *Handbook of Research on Multicultural Education*, ed. James Bank. New York: Macmillan, 1995.

Ferguson, Ronald. "Paying for Public Education: New Evidence on How and Why Money Matters" *Harvard Journal on Legislation 28*, no. 2 (1991): 465-98.

Murnane, R.J., and B.R. Phillips. "Learning by Doing, Vintage, and Selection: Three Pieces of the Puzzle Relating Teacher Experience and Teaching Performance." *Economics of Education Review*, vol.1, no.4 (fall 1981): 453-65.

Endnotes

1 Ronald Ferguson, "Paying for Public Education: New Evidence on How and Why Money Matters," *Harvard Journal on Legislation 28*, no. 2 (1991): 490.

2 E. Armour-Thomas et al., *An Outlier Study of Elementary and Middle Schools in New York City: Final Report* (New York: New York City Board of Education, 1989).

3 R.J. Murnane and B.R. Phillips, "Learning by Doing, Vintage, and Selection: Three Pieces of the Puzzle Relating Teaching Experience and Teaching Performance," *Economics of Education Review*, vol. 1, no. 4 (fall 1981): 453-54.

4 See J.M. Johnston and K. Ryan, "Research on the Beginning Teacher," in *The Education of Teachers: A Look Ahead*, ed. K.R. Howie and W.E. Gardner (New York: Longman, 1983); Murnane and Phillips; G. Moskowitz and J.L. Hayman, "Interaction Patterns of First Year Typical and Best Teachers in Inner-City Schools, *Journal of Educational Research 67* (1974): 224-30; and Claire J. Rottenberg and David C. Berliner, "Expert and Novice Teachers' Conceptions of Common Classroom Activities" (paper presented at the annual meeting of the American Educational Research Association, Boston, Mass., 1990).

5 L. Huling-Austin and S. C. Murphy, "Assessing the Impact of Teacher Induction Programs: Implications for Program Development" (paper presented at the annual meeting of the American Educational Research Association, Washington, D.C., 1987).

6 S. Odell, "Induction Support of New Teachers: A Functional Approach," *Journal of Teacher Education 37* (1986): 26-30.

7 David P. Wright, Michael McKibbon, and Priscilla Walton, *The Effectiveness of the Teacher Trainee Program: An Alternate Route into Teaching in California* (Sacramento, Calif.: California Commission on Teacher Credentialing, 1987).

8 Linda Darling-Hammond, *The Current Status of Teaching and Teacher Development* (New York: National Commission on Teaching and America's Future, 1995).

9 National Center for Education Statistics, *New Teachers in the Job Market, 1991 Update* (Washington, D.C.: U.S. Department of Education, Office of Educational Research and Improvement, 1993).

10 National Center for Education Statistics, *Schools and Staffing in the United States: A Statistical Profile, 1990-91* (Washington, D.C.: U.S. Department of Education 1993).

11 Jeannie Oakes, *Multiplying Inequalities: The Effects of Role, Social Class, and Tracking on Opportunities to Learn Mathematics and Science* (Santa Monica, Calif.: The Rand Corporation, 1990).

12 Arthur E. Wise, Linda Darling-Hammond, and Barnett Berry, *Effective Teacher Selection Practices* (Santa Monica, Calif.: The Rand Corporation, 1987; and Murnane and Phillips).

13 D.W. Grissmer and S.N. Kirby, *Teacher Attrition: The Uphill Climb to Staff the Nation's Schools* (Santa Monica, Calif.: The Rand Corporation, 1987).

14 California Commission on the Teaching Profession, *Who Will Teach Our Children?* (Sacramento, 1985).

15 Linda Darling-Hammond and Barnett Berry, *The Evolution of Teacher Policy* (Santa Monica, Calif.: The Rand Corporation, 1988).

16 Linda Darling-Hammond, "Knowledge and Teaching: Policy Issues Posed by Alternative Teacher Certification," *Peabody Journal of Education 67*, no. 3 (1992): 123-54.

17 Linda Darling-Hammond, *Professional Development Schools: Schools for Developing a Profession* (New York: Teachers College Press, 1994).

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School-Based Financing and Opportunity to Learn

Shifting to school-based management and school-based financing can be a powerful tool in creating quality education programs for all students. By decentralizing power and resources, local communities gain the flexibility and responsibility to make decisions that will best help students learn. Schools should follow this lesson from businesses that have successfully restructured to become more efficient and effective.

The Need for Decentralized, Site-Based Management

Current education reformers hope to have the education system produce much higher levels of student achievement and educate all students to high levels of thinking, problemsolving, communication, and competency in complex subject matter. If the experiences of other organizations needing to provide similarly new high levels of performance can serve as a guide, accomplishing these higher expectations will require the education system to reorganize and decentralize. High-involvement management, in which teams of individuals actually providing services or making products are given decisionmaking authorities and held accountable for results, is the emerging high-performance management and organization model in both the public and private sectors of the economy.

School-based management has been proposed as a way to make schools more effective in producing high levels of student achievement. It is a way to restructure site-district relationships in a manner that delegates much more power, authority, and accountability to the school-site level. Many reformers argue that school-based management is local, gives control of education to parents and teachers, and is the most effective strategy for producing opportunity to learn for all students. If school-based management is to create the desired effects on student achievement and create the opportunity to learn in all schools, it must be accompanied by devolution of much more authority than is usually the case.

Effective school-based management entails more than creating school-site councils and giving them power to make some decisions. As a governance and management tool, school-based management will only lead to curriculum and instructional changes and improved student performance if it is used effectively. A school-based management structure must be designed comprehensively and then used to implement high-quality curriculum standards designed to educate all students to high standards of thinking and problem-solving and boost school results.

Effective School-Based Management

A high-involvement, school-based management strategy decentralizes four key resources: power, knowledge, information, and rewards.

Power is required for a well-informed, competent faculty to have the authority to make decisions about the optimal application of resources and the optimal educational processes to use. It means the school team is given a lump-sum budget to spend any way it decides, subject only to a constraint on the total amount. Further, the school team must be given authority to recruit, select, develop, and evaluate personnel. The most effective school sites also create a variety of vertical—math, science, language arts, and student discipline—and horizontal—subschool and

grade level—teacher decisionmaking teams to involve all teachers in decisionmaking roles.

Knowledge and skills are required for employees to optimally perform their new roles in order to achieve high performance and continually improve outcomes. Knowledge and skills are needed in at least four areas: interpersonal or team skills for working together effectively in a group setting; technical knowledge and skills for providing the service (i.e., new curriculum and instruction expertise); breadth skills for engaging in multiple tasks, especially tasks such as curriculum and staff development decentralized to the work team as a result of the flattened organizational structure; and business knowledge and skills for managing the fiscal aspects of the school. Schools taking this aspect seriously seek to create schoolwide capacity for change that promotes a sense of professional community and a shared curriculum and instructional knowledge base among all the faculty.

Information about organizational goals, objectives, and levels of performance and about the key parameters of the work processes are required for the workforce to make good decisions that foster organizational goals and high performance. This would include information on district and site revenues, costs, cost structures, customer satisfaction, benchmarks with other schools, and data on the environment. The most effective schools create many vertical and horizontal communication channels and actively seek to share information with everyone in the school community.

Rewards is the final resource that is decentralized. Rewards mean that the employee compensation structure must be redesigned to align the self-interest of the faculty with organizational objectives. High-performance organizations shift from seniority-based pay to pay based on direct assessments of knowledge and skills. A second component includes performance-based pay allocated on a group or team rather than individual basis, such as cost-reduction gain sharing and group-based salary bonuses.

Three other factors are positively associated with effective school-based management programs. The first factor is an "instructional guidance" system that includes vision statements on the school's teaching and learning goals and the means by which to achieve them as well as district or state student achievement goals and curriculum standards. The second factor is principal leadership. Principals active in restructuring schools are strong leaders. They provide opportunities for teachers to engage in curriculum and instructional leadership, help create a culture of shared decisionmaking, and serve as brokers of information, knowledge, and resources between the faculty and the broader community. The third factor associated with effective school-based management is a clear and focused accountability system that includes at least four elements: clear and measurable education goals that are centered on student achievement in core curriculum content areas; measures that indicate the current status of student performance and changes over time; a reporting system that periodically informs the public, the school system, parents, and students of school performance in accomplishing results; and rewards and sanctions (i.e., consequences tied to *changes in schoolwide performance over time*). Indeed, a results-driven system can succeed only if consequences are tied to changes in system performance.

School-Based Financing

Site-based management requires a new school finance system. Most states have a district-driven finance system. Money is raised by districts and is distributed by the state and the federal government to local districts. Schools receive resources—teachers, books, transportation, etc.—but they rarely receive money. This district emphasis needs to change to a school orientation to implement effective decentralized management.

Focus on Financing the Site

Decentralizing budget power to the school is the first fiscal implication of this new approach. States would budget most dollars in a lump sum directly to schools. This more

radical approach already is happening in states with charter school and public school choice programs. The less dramatic and more practical approach would be for states to require districts to allocate 85 percent to 90 percent of all dollars—both general and categorical—to schools in a lump sum. This policy would ensure that the bulk of dollars would be available for use at the school, and it would not disrupt the existing district-based finance structure.

> One component of a measure of fiscal opportunity to learn could be whether a percentage, say 85 percent, of each district's per pupil revenue was budgeted in a lump sum to each school site.

The Formula. If the state moved to a school-based funding system, each school would receive an equal base level of dollars per pupil. Different per pupil amounts could be provided for elementary, middle, and high school students, though an argument could be made to provide all with the same per pupil amount.

The base spending amount should be set at a level that would allow nonmetropolitan districts to provide a high-quality education program (e.g., the expenditure of the district at the ninetieth percentile of spending for nonurban districts, as is suggested in William Clune's essay). For districts such as metropolitan districts needing or wanting to spend above that level, a guaranteed tax base (GTB) should be provided that is set at the property wealth per pupil of the district at least at the ninetieth percentile. GTB aid should be available for total expenditures up to the district expenditure at the ninetieth percentile.

> Another component of a definition of fiscal opportunity to learn could be whether the state foundation expenditure level is at or above the spending per pupil at the ninetieth percentile of nonmetropolitan districts and whether the formula also includes a guaranteed tax base that provides resources equal to the wealth of the district at the ninetieth percentile; up to expenditures at the ninetieth percentile. This definition would eliminate the disparities experienced by the current lowest-spending districts.

The third component of the formula should be an adjustment for special needs pupils. This is necessary because some schools have poor children who need additional services in order to learn the core curriculum. The base allotment should be augmented by a substantial amount for every poor child. The dollar amount for this add-on should be sufficient for the school to raise the achievement of low-income children to acceptable levels of proficiency on thinking and problemsolving tasks—at least $2,000 for each poor student, which is the cost of implementing the Success for All program, a program that successfully increases student achievement for poor and minority students.

> A third component of a definition of fiscal opportunity to learn could be whether each site had an additional $2,000 from a combination of state and federal Title I sources for each low-income child.

Professional Development. Effective decentralized management requires substantial ongoing training and professional development. A straightforward way to finance such ongoing training would be to require school sites to set aside 2 percent to 4 percent of their entire budget for training purposes. At a site expenditure level of $5,000 per pupil, this would mean that $10 to $20 per pupil would be devoted to ongoing, ambitious professional development.

> A fourth component of a definition of fiscal opportunity to learn could be whether 2 percent or more of each school site's budget is set aside for ongoing professional development.

Teacher Salary and Reward Strategies

Following the high-involvement framework of site-based management, the major implication here would be to shift from a salary structure based on years of experience and education units to one based on direct measures of what teachers know and can do as well as group, school-based performance awards. Such a structure could also include a salary increase for certification from the National Board for Professional Teaching Standards.

A skill-based pay system or pay-for-knowledge pay structure would need to specify the knowledge areas that would qualify for pay increments and have a way to assess whether teachers had the knowledge and skills for each skill block so identified. Skill blocks could be related to increasing depth of knowledge in a content area; "breadth" skills such as curriculum development, staff development, and student counseling; and "management" skills for developing and monitoring school budgets, running decisionmaking teams, and monitoring a school's strategic plan.

In addition, performance awards based on schoolwide improvements in student performance could be provided on top of a skill-based pay system. Performance awards could include bonuses for meeting or exceeding improvement targets; the awards could be fixed, dollar-amount bonuses or percentage salary bonuses for all staff in a school. Alternatively, bonus funds could be restricted to just school improvement or professional development activities. Gainsharing programs could also be implemented, allowing the faculty or the school to keep as a bonus any dollars saved by restructuring the school, as long as student performance improvement targets were maintained.

A fifth component of a definition of fiscal opportunity to learn could be whether a certain percentage, say more than 50 percent, of salary expenses is provided on the basis of knowledge and skills rather than education units and experience. Because this could be a long-term goal, an intermediate measure could be whether some extra salary is provided for teachers with certification from the National Board for Professional Teaching Standards. A supplement greater than or equal to some fixed dollar figure, say $5,000, would make this definition more stringent.

Making All Dollars Discretionary

If a full-fledged, school-based budgeting system were implemented, nearly all dollars would be discretionary and controlled at the school-site level by school staff. If only partial budget devolution occurred, then the spirit of school-based management would be to allow sites to "trade" staff provided by district formulas for other types of staff—two administrators for three teachers, for example—or for instructional technology or any other preferred resource. For centrally budgeted items such as supplies, utilities, and substitute teachers, districts should also allow sites to use the funds for other purposes if they reduced expenditures in any area. Such a strategy would both create incentives for schools to create new discretionary dollars from currently existing and budgeted dollars as well as make some school operations run more efficiently.

A sixth component of a definition of fiscal opportunity to learn could be the degree to which districts budgeted certain resources to schools on a per pupil or formula basis—staff, substitutes, supplies, utilities, etc.—and allowed sites to retain as well as roll over any cost savings produced.

An additional policy implication is enactment of or expansion of charter school programs. Under this type of program, states essentially fund the school directly, or indirectly through the agency that provides the school with a charter. The fundamental fiscal result of a charter school program is that all dollars flow directly to the school in a lump sum.

A seventh component of a definition of fiscal opportunity to learn is whether the state has a charter school program; whether the base amount, adjusted for inflation, provided to each site is equal to or greater than the median in some year; and whether at least some fixed percentage of schools, say 25 percent, could opt for the charter program.

Conclusions

Recent reform efforts focus the system on curriculum and instruction changes and new levels of student achievement. An essential element in raising student achievement across the board, and hence the opportunity to learn for all students, is spreading changes to all school and classrooms. A more decentralized system, in which sites have much more power, authority, responsibility, and accountability, is the way most other public and private sector

organizations have reorganized to produce new levels of high performance. States should take directions from these successful attempts and implement a decentralized management system for their schools.

School sites need power over the bulk of the budget, authority to decide how to reallocate current and new resources to more productive strategies, a set-aside of 2 percent to 4 percent of their budget for ongoing professional development, and new forms of skill-based pay and school-based performance awards. Direct funding of school sites as described here would provide all schools with the fiscal resources to create a high-quality education program. Decentralizing control to the school site would provide schools with the power and flexibility to use these resources efficiently and effectively, thus creating the opportunity to learn for all students.

Resources for Further Reading

Mohrman, Allan, Susan Albers Mohrman, and Allan Odden. "Aligning Teacher Compensation with Systemic School Reform: Skill-Based Pay and Group-Based Performance Rewards." *Educational Evaluation and Policy Analysis*. Forthcoming.

Odden, Allan. "Decentralized Management and School Finance." *Theory Into Practice 33*, no. 2 (1994): 104-11.

Odden, Eleanor R., and Priscilla Wohlstetter. "Strategies for Making School-Based Management Work." *Educational Leadership*. Forthcoming.

Jeanne Allen

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Allen began her Washington, D.C., career working on Capitol Hill. Before founding the Center for Education Reform, Allen was affiliated with national thinktanks and served as an official in the U.S. Department of Education.

She is the author of The School Reform Handbook: How to Improve Your Schools.

Creating Equity of Opportunity Through School Choice and Charter Schools

Parental involvement is a key aspect of creating the conditions for learning. Charter schools and choice programs are a significant way to create real parental engagement because they enable parents to invest in choosing their child's school. By freeing the schools from many regulations, charter schools also can create programs tailored to the needs of the students attending the school, can utilize other community resources creatively, and can even save states money.

The struggle to provide equitable resources to all children is rooted in the theory that equal results can only be achieved through equal resources. This theory has some merit in practice. Yet, overwhelmingly, the research and evidence demonstrate that student success is not directly a result of the amount of money spent. Opportunity to learn is a direct result of having the right kinds of conditions present in the classroom and in the home. Many of these also cost money, but there are other systemic conditions that are fundamentally more important to student progress. With experiments in school choice and charter schools having now matured, the evidence is in that an equal opportunity to learn is conditional upon an equal opportunity to excel.

Charter schools combine the fundamental aspects of public schooling with the flexibility and freedom of the private sector. Although released from the majority of a state's public school regulations, charter schools leave the basics firmly in place. These schools are free to innovate in the areas of curriculum, personnel, scheduling, and financial administration, but they still must practice open-admission policies, meet health and safety standards, comply with civil rights laws, and achieve the student performance goals they have set forth in their charters.

The essential elements of choice and charter plans are aligned with the consensus on what makes a good school—the need for smaller schools, teacher and principal autonomy, and parental involvement. Parental involvement can be accomplished in many ways, but the most effective way is when parents have a direct choice over elements of curriculum and school operations, and perhaps most important, when a parent feels a true partnership by choosing all these aspects through choosing a school. In every existing choice program, parents choose a school and then choose to stay involved.

> Promising to continue to monitor and be involved in her new choice school, a Milwaukee, Wisconsin, mother emphasizes, "Katari has been in three schools in the past year in an effort to find a school that would work with him and his academic needs. It took some time for him to adjust to his new school, and he struggled with the new curriculum and environment at first, but his school has been able to give him the necessary encouragement and push for him to be able to pull his grades up. Now he is progressing better than he has in a long time."

A mother utilizing a choice program in Austin, Texas, laments over the public school she chose to leave: " . . . the class-

room was overcrowded and the teachers seemed to hold a lot of resentment toward me when I tried to get involved and help my child."[1]

Whether demonstrated through a school choice plan, charter schools, or an alternative program in which parents are brought in as direct partners in their children's schooling, a child's opportunity to learn is tied directly to whether parents have an opportunity to choose. For what they are choosing is the best schooling environment for their child.

Barriers to Local Control

One of the major reasons for this is because of the way schools are financed in school choice and charter school systems, compared with the way traditional public schools are funded. Traditional schools receive their money from a combination of local, state, and federal funds, and monies are allocated for a variety of programs based on different formulas. This traditional way of operating funds, programs, and schools is based on no other criteria than the number of students or the kinds of programs on hand. Funding is not pegged to performance, but rather to programs mandated by state or local boards. Forcing improvement in schools, whether by adding many more requirements or oversight, does not yield positive improvement without the actual freedom to put changes in place.

As long as communities do not control their own affairs, there is little room for all students to have an opportunity to learn. However, today's status quo allows no room for a community to have a direct say in what or how schools are controlled. Schools are governed much more by state mandates than by local control, and school boards have little say in most communities about programs of learning or how schools function in general.

For example, on the surface, some school boards have the authority to propose tax changes, and communities are permitted to vote on these school budgets. However, in some instances, a community's "no" vote against new taxes will still result in increases. This is because states such as New York *require* school boards to enforce new budgets that are set as identical to the previous year's budget with an increase to cover inflation.

In addition, union contracts stipulate much of what schools may do, from broad employment policies to specific tasks that teachers may or may not be permitted to perform. For example, in one California district where a teacher volunteered to type a school newsletter focused on parental involvement, the central administrative office demanded that the efforts stop. According to a memo the teacher received, "only 'classified' personnel (secretaries, etc.) could" type. In many cases, teachers are expressly prohibited in their contract from providing additional after-class instruction. Most school policies, which are dominated by employment contracts, even forbid parent volunteers or unpaid teacher aides, despite the interest and capability of many parents to assist.

All of these obstacles to local control originally stem from how resources are allocated. The opportunity-to-learn theory, that all children must have equal access to resources before they can be held accountable, is flawed from the start. Few rational people would disagree that all children should have the same opportunities. Yet one cannot have equal opportunity until the resources are allocated equally among students and until that money is allowed to follow the choices of parents and teachers whose involvement is most important to a child's academic progress.

Arbitrarily providing dollars does not cause wholesale improvement. Although money is essential, it is not productive until it is spent on productive enterprises. The abundance of research demonstrates little or no correlation between expenditures per pupil and student achievement in a flawed system. Eric Hanushek, professor of economics and public policy at the University of Rochester, highlights the faults.

> The highest priority for America's schools today is to use existing resources more efficiently. When economists try to interject the economic principle of efficiency into the

education debate, however, they often meet with stout resistance—largely because of misunderstandings. Efficiency does not mean that educators should undertake a relentless drive to cut costs. Rather, it means that they should measure both the costs and benefits of various approaches to education—and choose the approach that maximizes the excess of benefits over costs. In simplest terms, funds devoted to schools should be put to their best possible use. If two programs are competing for limited funds, put the money into the one that achieves the best results. If a program does not improve student performance, do not fund it.

These notions are so commonsensical that resistance to them would seem out of the question. But as America's schools are now run, virtually no one in them has a serious interest in improving performance or conserving resources. And all are reluctant to face the uncertainty that change would entail. The best way to improve performance is to establish mechanisms that directly reward improvement.[2]

Hanushek and his colleagues argue that money is spent ineffectively in most schools today because the incentive system is confused, at best. A desire to transform these incentives bred the theory behind charter school and choice programs.

Charter School Financing

Charter schools that exist today are funded directly by the public monies allocated for each student in his or her state. Each law sets incentives by establishing a specific funding mechanism that allows charters to collect a tuition payment for each student attending the school.

In Massachusetts, for example, "the mechanism depends on whether the community where the student lives is spending above or below its foundation budget (state-allocated funds). If the community spends below its foundation, the tuition payment is equal to the community's average per-pupil cost. If the community spends above its foundation (adding local funds), the tuition payment is equal to either the average per-pupil cost in the community in which the charter school is located or the average per-pupil cost in the community in which the student lives, whichever is less."[3]

If a child opts to go to a charter school in another community, but one in which the per-pupil cost is higher, he or she "pays" only the per-pupil cost of the sending community. The sending school district directs the money that it maintains for that student to the selected charter school. A child going to a charter school located in a community with a lower per-pupil cost than the community the student is coming from actually saves the sending community the difference.

To make up costs not met by tuition-paying students, charter schools may also accept grants and donations. *More important, charter schools do not follow most state and local mandates, and thus, like most privately operating enterprises, they can do things that make the schools work within the parameters of their funding.*

Out of the eleven charter school states, only Arizona provides some funding for start-up costs, including administrative costs or even building renovation and remodeling. Each approved applicant receives a grant of up to $100,000 initially and may qualify for more. Charters in Arizona may be approved by the local district board, the state board of education, or a special new charter school board. Schools approved locally are financed locally; those approved by the state may be financed by the state.[4] Massachusetts' law allows charter schools to draw on local property taxes. Minnesota's law does not provide access to local taxes, but the state pays all of the general educational and capital expenditures as in traditional schools. The state also provides the same per-pupil special education funding and compensatory assistance that comes from programs such as the federal Chapter 1. Similar agreements exist in California, though several school districts throughout the state have attempted to withhold funds from charter schools for the federal school lunch program, Chapter 1, or even bilingual education, argu-

ing that the school must follow the district's program or contract with its own suppliers. Although that is not the intent of the law, many charter operators simply do not have the wherewithal to buck the system. Most of the other charter laws have clarified such areas to ensure that this type of conflict does not arise.

Colorado, one of the first five charter laws, also has such restrictions that explicitly require charters to negotiate with the district for services. Yet each school is "entitled to a proportionate share of state and federal resources generated by students with disabilities or staff serving them and a proportionate share of monies generated under other federal or state categorical aid programs."[5]

In Michigan charter schools are treated as individual school districts, wherein the only monetary stipulation is that the sponsoring agency is responsible for monitoring the charter's compliance with the contract and for passing through money for each student directly to the school.

In fact, in most states, charters are actually costing less per pupil than are traditional schools, because they often are not eligible for the same proportion of funding that is directed toward most schools. Colorado's charters work with as low as "80 percent of the district per-pupil operating revenues."[6] In Massachusetts the lowest-spending districts determine the per-pupil funding directed to charter schools.[7] Unfortunately, as mentioned before, charter schools in states with laws granting less autonomy are often denied or delayed monies in negotiations with school boards.

Creating charter schools is increasingly seen as a way for both more equity and excellence. Once the method of financing is understood, it is important to understand why it is that charter school reform has become one of the most effective and popular innovations in public education today. The autonomy enjoyed by charters that are free to hire and fire, plan exciting curricula, and attract students by choice creates unique and high-quality schools. California Superintendent Al Andrews complimented his district's Options for Youth charter school, which is targeted to dropouts: It "found literally 200 students in our valley that we didn't know existed," and it provided them with an option to continue schooling. St. Paul's City Academy, the nation's first charter school, graduated seventeen former dropouts in 1994, fifteen of whom went on to college or vocational schools. Finally, Michigan's Cedar-Riverside Community School is geared toward meeting neighborhood needs; the school's student body is made up of children from a community housing project who were previously bused to more than forty different schools.

School choice programs that extend decisions to families only in the public school realm are funded similarly. Minnesota, the longest running public school choice program, provides the same per-pupil cost to students as in traditional schools. As of 1993, 113,000 Minnesotan students were exercising choice. In the case of its postsecondary enrollment options plan, junior and senior high school students can choose to take a college course for high school credit and the base state cost of approximately $2,500 per student follows them.

Other states with postsecondary options include Colorado, Florida, Iowa, and Ohio, and open-enrollment plans are available in eleven states. Nine additional states have select districtwide public school choice plans in which enrollment is simply open, with no transfer of money save the accommodation of pupils that normally takes place when the average daily attendance is reported to the state via the district.

School choice among private schools functions somewhat differently. In the case of Milwaukee, Wisconsin, where 1,500 children are permitted to attend various private nonsectarian schools (830 currently participate), $3,200 in state dollars is given directly to the schools for each student who participates in the choice program. The local funding remains with the Milwaukee public schools. Vermont also provides tuition assistance in the form of vouchers to children in districts that do not have a high school. In this case, the sending district

subsidizes the receiving district, which, in turn, provides the funding to either the public or private school of choice.[8]

Pending legislation in various states authorizing continued experiments in full school choice varies in terms of funding. However, in most of the proposed bills, roughly half of the state's funding would follow a child to a school of choice. Illinois' proposed legislation would provide $2,500 to each of 2,000 low-income students in Chicago; Ohio would allow participating private or parochial schools to receive $2,500 per choice student, and Texas would grant low-income students in twenty pilot districts the opportunities of choice. Pennsylvania Governor Tom Ridge has proposed providing roughly $1,000 to each of 38,000 qualifying children. Connecticut provides for a local option bill that would allow any district, upon its choice, to provide roughly half of the funding allocated for each of its students in the form of a voucher. The rest of the money would stay in the local district and thus not cause any loss to the operation of the schools.

Conclusions

Real choice uses the funding of students to drive school improvement. As an *incentive*, schools must attract students in order to thrive and continue to operate. Equity is achieved by giving all children the same means to go to alternative schools, an option that already exists among wealthier residents. Opportunity to learn is achieved by opportunity to choose. After years of grappling with money as the key to success, with few results, today's charter and choice plans are seen as the key to improving opportunities for all children and raising the excellence of all schools.

Resources for Further Reading

Bierlein, Louann A., and Lori A. Mulholland. *Charter School Update: Expansion of a Viable Reform Initiative*. Tempe, Arizona: Morrison Institute for Public Policy, 1993.

Bierlein, Louann A., and Lori A. Mulholland. *Comparing Charter School Laws: The Issue of Autonomy*. Tempe, Arizona: Morrison Institute for Public Policy, 1994.

Fine, Michelle. *Chartering Urban School Reform: Reflections on Public High Schools in the Midst of Change*. New York: Teachers College Press, 1994.

Sautter, Craig. *Charter Schools: A New Breed of Public Schools*. Oak Brook, Ill.: North Central Regional Education Laboratory, 1993.

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Endnotes

1 "Has the Scholarship You Received Last Year From the CEO Made a Difference for Your Child?," press release of the Austin CEO Foundation, Austin, Texas, 1994.

2 Eric Hanushek, "Making America's Schools Work," *Brookings Review* (fall 1994).

3 Michael Sentance, *Charting the Course: Public School Options in the 1990s* (Boston, Mass.: The Executive Office of Education, 1993).

4 Marc Dean Millot, *Autonomy, Accountability, and the Values of Public Education: A Comparative Assessment of Charter School Statutes Leading to Model Legislation* (Santa Monica, Calif.: The Rand Corporation, December 1994).

5 Charles P. Rose, "Charter School Legislation" (paper presented at the Chicagoland Leadership Conference, Lombard, Ill., October 28, 1994).

6 Colorado *Revised Statutes*, Title 22, Education School Districts, art. 30.5—Charter Schools.

7 Piedad F. Robertson, *Legislation Establishing Charter Schools* (Boston, Mass.: The Executive Office of Education, 1993).

8 Herbert J. Walberg and Joseph L. Bast, "School Choice: The Essential Reform," *The CATO Journal* (spring/summer 1993).

Andrew C. Porter

Since 1988 Andrew C. Porter has been a professor of educational psychology at the University of Wisconsin-Madison and director of the Wisconsin Center for Education Research. Most recently, he has concentrated his research on the role of curriculum and instruction in raising student achievement and how indicator systems can be built around these core education activities. He frequently consults for the National Science Foundation and the National Center for Education Statistics and is on the technical advisory board for the New Standards Project.

Prior to taking the position at the University of Wisconsin, he was a professor and associate dean of the college of education at Michigan State University.

Porter has published articles in Educational Researcher, Education Policy, American Journal of Education, and Educational Evaluation and Policy Analysis *and in numerous edited volumes.*

Guaranteeing Good Instruction

The focus on improving all schools gives states an opportunity to focus on the direct antecedents of student achievement—curriculum and instruction. By concentrating resources and focusing accountability on what is actually delivered in the classroom and how it is delivered, states can influence what is learned in a way that a focus on inputs and indirect measures of good practice cannot. An accountability system that focuses on opportunity to learn can create a vision of good practices that educators can follow by providing models and indicators of the desired enacted curriculum.

If students are to reach new standards, dramatic changes will need to take place in the enacted curriculum. When teachers close the classroom door and work with students, the nature of that work must be fundamentally different than what has been common thus far. Opportunity-to-learn standards can be used to clarify at least some of the characteristics of desirable school practices.

Because improved student achievement of ambitious content is the goal, opportunity-to-learn standards should concentrate on the direct antecedents of student achievement. Research has shown that the strongest school-controlled predictor of student achievement is the content that is delivered to students. Obviously, the pedagogical strategies employed in delivering the content also are important, though there is less consensus about these matters. Last, there are the curriculum-embedded resources on which students and teachers can draw, such as the laboratories used in the delivery of science instruction or the graphing calculators used in the study of mathematics.[1]

Traditionally, however, when education policy has addressed school processes, attention has not focused on the direct antecedents of student achievement. Instead, education policy has sought to regulate teacher training and certification, curriculum materials, staff development, and external assessments. An even more common policy target is per-pupil expenditures, which is yet further removed from student achievement. The advantage of focusing policy on the properties of schooling that are far removed from student achievement is that they are relatively easy to measure. Certainly they are easier to measure and regulate than are the properties of the enacted curriculum, which vary from classroom to classroom and even day to day. The disadvantage of focusing policy on these relatively easy-to-measure and regulate variables is that they have only weak relationships to student achievement; they offer little guarantee of good instruction.

As states pursue the implementation of standard-setting reforms, the question should not be whether the reform costs additional money. The answer to that question is surely yes. Significant new investments in education will be required. Much of the new money will be needed up front to support development costs to produce better instructional materials, better student assessments, better staff development, and better teacher education. And there will be serious continuing costs beyond these initial periods of development. Providing more and better staff development will need to be an ongoing commitment. New assessments will cost more to give and to score, and curriculum materials will need to be continually revised and upgraded.

The question that must be answered is how best to invest the new resources. Should schools be given up front the money they desperately need to enable them to change or, alternatively, should schools be expected to begin the change process in a serious way with the resources they currently have? Past experience provides the answer. First, when significant additional financial resources have been pumped into schools without making those additional resources conditioned in any clear way on intended school change, the investment has not resulted in increased student achievement. Recent past increases in school funding have been used, quite appropriately, to upgrade the teaching profession and reduce class sizes. Second, there is good reason to believe that a much better job of schooling can be done with existing resources. Although not all teachers have the necessary knowledge to deliver a more demanding and engaging curriculum to students, most teachers do. Teachers can begin immediately to shift their instruction away from heavy reliance on teacher-centered work and a focus on memorizing facts and mastering algorithmic skills and toward student-centered work and a focus on students learning to use their knowledge to reason and solve problems. This process can begin without a single additional dollar, though soon after the process begins, additional dollars will be needed. Third, and most important, forcing educators to have a plan for how additional resources would be used as a prerequisite for getting those resources makes common sense. Not only would such a process facilitate coordination and goal direction at the system level, but it would also reduce the amount of wasted dollars spent simply because dollars were available and had to be spent.

What Role Might Opportunity-to-Learn Standards Play in Guaranteeing Good Instruction?

First, opportunity-to-learn standards might be the basis for school-by-school accountability. Second, opportunity-to-learn standards might present a clearer vision of challenging curriculum content and pedagogy for all students. Third, opportunity-to-learn standards might provide an indicator system that would describe the extent to which teachers across districts, states, or larger regions implement instruction consistent with curriculum standards.

Accountability

Of the three possible roles, formal school-by-school accountability is both the most talked about and the least attractive. A state could hold schools accountable for delivering an adequate education program to all students. Goals 2000 funding is contingent on states developing opportunity-to-learn standards. The National Education Standards and Improvement Council (NESIC) is to certify voluntary national opportunity-to-learn standards, and states may submit their standards to NESIC for possible certification even though NESIC certification is not required. Further, NESIC will only certify state assessments after states have demonstrated that all students have been prepared in the assessed content.

States, districts, and other organizations have a long, unproductive history of using inputs and school processes rather than student outcomes to hold schools accountable. Examples are school accreditation programs and detailed lists of state requirements for school practices that exist in virtually every state. Most states have minimum standards for student attendance, teacher qualifications, and minimum per-student funding. States have curriculum frameworks, minimum course requirements for high school graduation, guidelines for time to be spent on each subject at the elementary-school level, and continuing professional development requirements for teachers and administrators. Several states have restrictions on what textbooks can be used. These old notions of opportunity to learn, defined in terms of inputs, have not had the desired effects. To the contrary, they have invited micromanagement that has dissipated energy away from high-quality assessment, curriculum, and instruction. As a result, there has been a shift toward school accountability for student outcomes rather than inputs. Using opportunity-to-learn standards for school

accountability could have the negative effect of shifting attention away from outcomes and once again back to inputs.

Vision

Most schools and teachers would like to provide high-quality instruction but few, if any, have relevant experience on which they can draw. They desperately need guideposts to point the ways in which their practice needs to change. State opportunity-to-learn standards grounded in research on effective instructional practices and school strategies might provide these much-needed guideposts. One example is the Professional Standards for Teaching Mathematics of the National Council of Teachers of Mathematics (NCTM).[2] This less well-known relative of the NCTM Curriculum and Evaluation Standards for School Mathematics provides standards for the teaching of mathematics, the evaluation of the teaching of mathematics, the professional development of teachers of mathematics, and the support and development of mathematics teachers and teaching.[3] The document stops far short of a script that teachers can follow but does illustrate with examples and narrative the types of activities teachers might use to promote student mastery of the NCTM content standards. Opportunity-to-learn standards might also communicate a vision of good instruction through instructional programs such as the Cognitively Guided Instruction and Success for All programs.[4] These programs are based on research and have been carefully tested to establish their effectiveness in promoting student learning. Regardless of the medium, state opportunity-to-learn standards should not be static. Opportunity-to-learn standards must be continually updated with new research and development work to communicate the properties of effective instruction for ambitious content standards.

Without a vision, most educators will lack direction about how their practice needs to change. But a vision must do more than simply clarify what is desired. It must also inspire educators to want to improve their practice. Building a vision that meets these challenges will not be easy. Besides being clear and inspiring, any vision must meet a third requirement. The vision must be supported by empirical validation. Education programs have come and gone over the years. The considerable popularity of today's new education programs attests to their clarity of desired practice and inspirational properties. Too many of these programs, however, represent no more than educated guesses about what will result in improved student learning of worthwhile content. Too often, empirical evidence of effectiveness has not been gathered before widescale promotion of these programs has occurred. State opportunity-to-learn visions must not repeat these mistakes.

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Indicators

State opportunity-to-learn standards could also provide the conceptual framework for a system of school process indicators focusing on the enacted curriculum.[5] First, indicators of the enacted curriculum can provide valuable descriptive information about the nature of schooling in a state: What types of schools provide what types of education to what types of students? Do students from poor families have the same opportunity to learn higher order thinking and problemsolving as do students from affluent families? Are instructional resources as available to students in one geographic location as they are to students in another? Indicators can provide basic descriptive information about the quantity and quality of instruction being provided by schools. Second, indicators can serve as a mechanism for monitoring state progress in education reform. To what extent is the enacted school curriculum in alignment with state content standards? Is the degree of alignment improving over time? Third, a system of indicators can help diagnose the causes of unsatisfactory performance of the state education system. When levels of student achievement are found to be low, questions remain about why. Indicators of the enacted curriculum can offer hypotheses by showing the relationship between various aspects of students' opportunity to learn and student achievement.

Indicator data could be collected on a probability sample of schools and certainly would

not need to be collected every year, because the purpose is largely for description rather than for school-by-school accountability. Typically, indicator data are not collected longitudinally, which makes them relatively inexpensive. Currently, indicator data on the nature of instruction offered to students are extremely limited. There are data on the types of courses students take, but virtually no information on the nature of instruction within those courses. There is some information about the preparation of teachers, but virtually no information about the ways that teachers actually teach.

If indicators of the enacted curriculum are to be used to keep track of progress, then languages for describing classroom instruction must be developed. Recently developed curriculum standards are a good start, but they are too general and incomplete to describe the enacted curriculum in ways that predict student achievement.

One way to measure the enacted curriculum is through teacher logs. In a recent national study on high school math and science, a daily log form asked teachers to record several indicators such as time spent on up to five topics of content; amount of time and emphasis on different modes of instruction and different student activities, including assigned homework; and the proportion of the class period spent on activities not directly related to the academic content of the course (e.g., announcements and attendance). A manual to guide the use of the logs was provided to each teacher. Prior to using the logs, each teacher received approximately one hour of instruction in the opportunity-to-learn language.

The teacher logs provide information that agrees remarkably well with independent classroom observations. Completing a log requires approximately five minutes of a teacher's time each day for each course/subject described. A questionnaire survey also was used to explore a less time-consuming way of collecting such data. The questionnaire asked teachers to report retrospectively on a semester of instruction, instead of each class period, using several of the dimensions in the log. Again the agreement between the questionnaire data and log data was encouraging.

Whether through teacher logs or questionnaires, measuring the enacted curriculum depends on teachers' reports of their practices. These reports have proven accurate when validated against reports of independent observers. Teachers' reports probably would continue to be valid when the data are used for professional development, school improvement, and descriptive indicators. But if the information were used for coercive monitoring and high-stakes accountability, this surely would compromise the integrity of teachers' reports.

Conclusions

There can be no guarantee of good instruction, just as there can be no guarantee of high student achievement. Regardless of the incentives, some teachers and schools will try harder than other teachers and schools, just as some students will try harder than other students. Similarly, for whatever reasons, some schools and teachers will make better use of the resources that they are provided than will other teachers and schools, just as some students will come to school more convinced of the importance of education and better prepared to take advantage of the opportunities provided than will other students. No accountability system can completely level the playing field for students, for teachers, or for schools, but leveling the playing field is not the only worthwhile goal. Hopefully, what standard-setting reform can do is focus the attention of students, parents, teachers, and administrators on enhancing student achievement of worthwhile content, energize the system to develop and pursue well-conceived, locally generated plans for school improvement, and stimulate the system to provide the necessary resources contingent on well-developed plans for how the resources would be used.

Opportunity-to-learn standards can be an important part of a state's strategy to reform classroom instruction. Content standards make clear what teachers are to teach. Performance standards make clear what students are

to learn. Opportunity-to-learn standards provide a vision for how change should proceed and an indicator system to monitor progress in the change process. Both the vision and indicators should focus on the direct antecedents of student achievement and should be firmly grounded in research. Successful reform will require additional resources. The change process should be initiated first, however, and additional resources should be made available contingent on well-reasoned plans for how the funds will be spent. Successful reform will also require additional incentives. Both student and school incentives should be based on gains in student achievement; student outcomes should be the focus of attention for state accountability.

Resources for Further Reading

Hanushek, E.A. "When School Finance 'Reform' May Not Be a Good Policy." *Harvard Journal on Legislation 28* (1991): 423-56.

Hedges, L.V., R.D. Laine, and R. Greenwald. "Does Money Matter? A Meta-Analysis of Studies of the Effects of Differential School Inputs on Student Outcomes." *Educational Researcher 23*, no. 3 (1994): 5-14.

Porter, Andrew C. "Creating a System of School Process Indicators." *Educational Evaluation and Policy Analysis 13*, no. 1 (1991): 13-29.

Endnotes

1 Andrew C. Porter, "Creating a System of School Process Indicators," *Educational Evaluation and Policy Analysis 13* no. 1 (1991): 13-29.

2 National Council of Teachers of Mathematics, *Professional Standards for Teaching Mathematics* (Reston, Va.: National Council of Teachers of Mathematics, 1989).

3 National Council of Teachers of Mathematics, *Curriculum and Evaluation Standards for School Mathematics* (Reston, Va.: National Council of Teachers of Mathematics, 1989).

4 E. Fennema, T.P. Carpenter, and P.L. Peterson, "Learning Mathematics with Understanding: Cognitively Guided Instruction, in *Advances in Research on Teaching, Volume 1*, ed. J. E. Brophy (Greenwich, Conn.: JAI, 1989), 195-222; and R.E. Slavin, N.L. Karweit, and N.A. Madden, eds., *Effective Programs for Students At Risk* (Needham Heights, Mass.: Allyn & Bacon, 1989).

5 Andrew C. Porter, "The Uses and Misuses of Opportunity-to-Learn Standards," in *Debating the Future of American Education*, ed. D. Ravitch (Washington, D.C.: The Brookings Institution, in press).